A profile of construction academics in Australia.

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Abstract

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Construction as an academic discipline is now in a mature phase compared to its circumstances two decades ago. Whereas early academics were drawn from industry or related disciplines with research histories thin and doctorates rare, this balance is reversing.

This paper discusses current issues facing construction academics in tertiary institutions in Australia and uses two questionnaires to analyse the current status of construction courses and the profile of academics in the construction discipline. The research addresses issues such as research versus industry experience, internal promotion versus the necessity to move for advancement. The research reveals a shifting in emphasis in the makeup of construction academics. Finally, some implications for the nature and future of the academic discipline are also explored.

Introduction

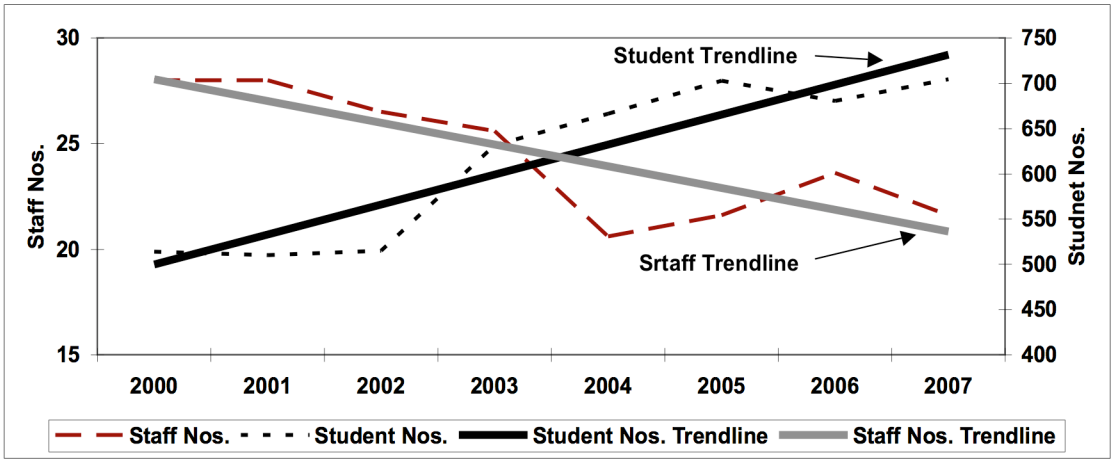
When construction education first moved to university level, the main criteria for lecturers was industry experience and to a lesser extent holding university qualifications. As there were no previous construction courses at university level, many of the early construction academics that held university qualifications were ones from related areas only. This also meant that in these early periods, staff could be promotion of to senior positions without the usual level of tertiary education common in established disciplines.

Whilst industry experience may have been the main requirement in the past, its significance in determining appointments is becoming less important. A developing trend in all Australian tertiary institutions is the requirement to increase research output and this has resulted in a change of the characteristic of new academics. In many institutions, an applicant for an academic position who has little or no research is unlikely to be 'short listed' for the position, let alone appointed. On the other side, applicants with research and in particular, doctorates are most likely to get short-listed and have good prospects of getting the appointment. In the more recent appointments, the typical appointment has been a person holding a doctorate or with a well established research record, but with limited and in some cases no industry experience.

The other growing trend is that tertiary institutions are endeavouring to be more entrepreneurial due to government cost cutting to the tertiary sector. Amongst other things, this has resulted in academic positions declining in numbers, resulting in student-staff ratios increasing. Graph 1 epitomises a typical institution offering

courses in the built environment, showing the comparison of staff and student numbers from 2000 to 2006. The student to staff ratio has increased from 18.36 in 2000 to 32.62 in 2007 and as can be noted from the graph, the trendline shows that student numbers are growing, while staff numbers continue to decline, or to put simply, student staff ratios are increasing.

Graph 1
Student-Staff ratios



Source: "Anonymous" University

Literature Review

Construction courses have been in higher tertiary institutions from 1968. Heathcote (2007) noted the first course was a 'diploma' at the NSW Institute of Technology (now, University of Technology, Sydney), with the first undergraduate degree course beginning in 1973 at the same institution. Heathcote also showed the development of the construction courses. Starting in 1973 as technical oriented courses, now some thirty five years later and over 10 institutions offering construction courses, they have become construction management oriented courses.

Construction courses are popular as McLaughlin and Mills (2006) found that student demand for construction courses in Australia and graduate employment from such courses remains high. An additional feature of the construction courses is that students can generally gain industry experience whilst studying. In a survey of construction students at UTS, Smith (2006) found that 97% of the students were in some form of employment, with 42% of the students employed full-time in the construction industry with forty hours or more per week.

Notwithstanding the demand and success of the construction courses, Best (2008) points out that there are mounting pressures on these construction courses at university level that are threatening their existence, due to government funding requirement to higher education institutions and the requirement for research output from all disciplines. Best adds that these pressures have witnessed the merging of the courses with quantity surveying and to a lesser extent property courses. In fact QUT has the only 'freestanding' course in quantity surveying offered in Australia (AIQS, 2007).

As research is becoming more important, this has had an impact on academic promotions, especially the vocationally based courses, such as construction where established academics more industry focused. In a study of property academics

within Australasia (another vocationally based discipline), Small and Karantonis (2007) found that there was a bias towards lower seniority grades in the property discipline compared to the overall proportions of other disciplines at UTS. It also found that only 50% of professors in property and 20% of associate professors held doctorates. By contrast, 54% of senior lecturers held doctorates including 75% of academics who were promoted to that level since 2000. Likewise, 60% of promotions to the professoriate in the same period held doctorates. This is consistent with the suggestion that the discipline is maturing and moving towards a more traditional qualification profile.

This paper analyses the current position of construction courses in Australian tertiary institutions and the academics in the discipline.

Data

Data has been collected from the eleven higher tertiary institutions that offer undergraduate construction courses in Australia. Two questionnaires were conducted, one with the course leader of each of the courses to determine information regarding the relevant course details within each institution and the composition of staffing within the course. The second questionnaire was sent to the individual construction academics in Australia to gather data on personal experience. In addition websites of the institutions were also used to gain additional information where required.

For a detailed comparison between the construction discipline and other disciplines, the academic profile for the University of Technology, Sydney was adopted as a reference. While a more robust approach may have been to compare several institutions, it was considered sufficient to use one only for this study since the data was required for indicative purposes primarily and inter-institutional differences were not expected to be sufficiently significant to distort the conclusions.

Results

The research begins with a comparison of the construction courses in Australia as shown in Table 1. The table identifies the relevant institution, where the course is located in the institution, its nomenclature and the composition of the staffing of the course.

Table 1 highlights some interesting implications for construction courses in Australia. Except for UWS, the words ‘construction’, building’ or ‘built environment’ appears in either the faculty or school name where construction is offered. However, ‘construction’ appears in all the nomenclatures for all construction courses across Australia.

Table 1
Comparisons of the construction discipline in Australian Tertiary Institutions

Institution	School	Faculty	Nomenclature	Faculty Breakdown						
				Professor	Associate Professor	Senior Lecturer	Lecturer	Associate Lecturer	Technical	TOTAL
CQU	Program of Construction	Science Engineering & Health	B Const Mngt	0	0	1	1	0		**2.0**
Curtin	Dept of Const Management	Humanities	B Appl Sc (C Mngt & Economics)	1	2	0	5	0		**8.0**
Uni SA	Natural & Built Environments	Engineering & Environment	B Const Mngt & Econ	0	1	2	5.5	0		**8.5**
RMIT	School of Property, Const & Project Mgmt	Portfolio of Design & Social Context	B Appl Sc (Const)	2	2	3	4	1		**12.0**
Uni Melb	Architecture Building & Planning	Architecture Building & Planning	1 Tier: B Envs 2 Tier: MConst Mngt	0.5	2	6	3	0	1	**12.5**
UNSW	Const Management	Built Environment	B Const Mngt & Property	2	4	3	3	0		**12.0**
UWS	Engineering	Health and Science	B Const Mngt	1	0	3	3	1	2	**10.0**
QUT	Urban Development	Built Environment & Engineering	B UrbanDev (C Mgnt & QS)	1	0	1	5	0		**7.0**
Deakin	Architecture and Building	Science & Technology	B Const Mngt	1.2	0.8	4	4	0.4	2	**12.4**
Newcastle	Architecture & Built Environment	Engineering & Built Environment	B ConstMgnt (Bldg)	0	1	1	6	0	2	**10.0**
UTS	Built Environment	Design Architecture & Building	B Const	0	0	6	2	0		**8.0**
TOTAL				**8.7**	**12.8**	**30**	**41.5**	**2.4**	**7**	**102**

Notes: 1. Some institutions do not use the term School or Faculty.
2. Beside the fractional appointments, those academics that teach across more than one discipline have also been treated as a fractional.
3. Adjustments were made by the author using the tertiary's website where required.

Analysing the composition of construction academics, one can observe that it is skewed towards the lecturer level (41.5 academics), the bottom end of academic classification. At the higher end, there are few professors (8.7), with four institutions without a professor in the discipline and two without either a professor or associate professor.

To provide a comparison with the construction discipline, a comparison with other faculties was also undertaken using the staff profile of UTS. The staffing profile of UTS faculties are summarised and shown in Table 2. An observation from Table 2 highlights that in relative terms the Faculty of Design, Architecture and Building (construction's faculty) has the smallest relative number in the professoriate, that is the number of professors plus associate professors.

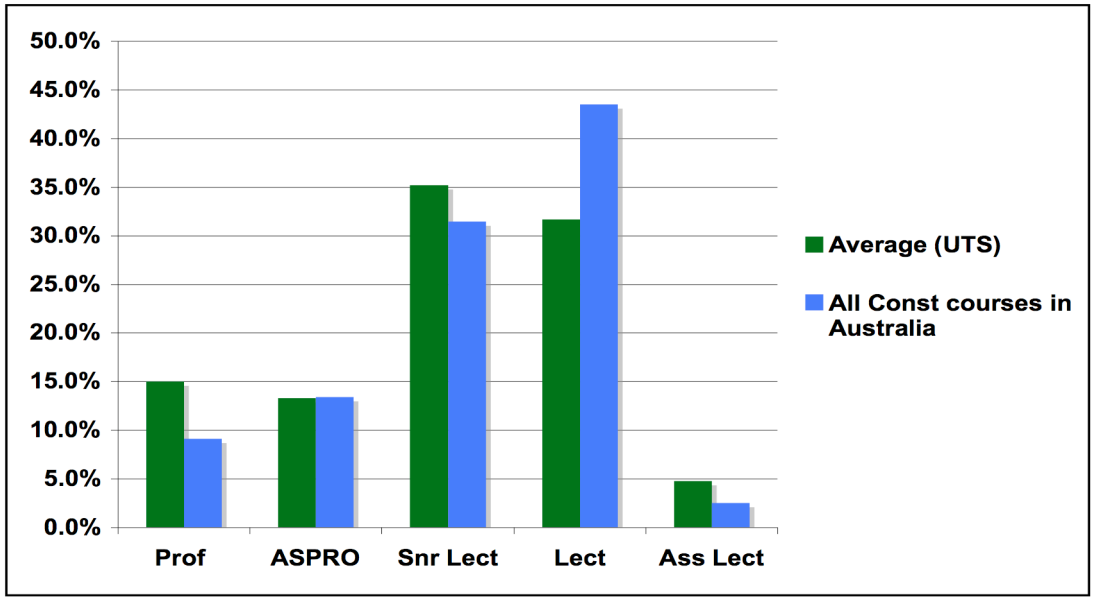
Table 2
UTS Staff Profile by Faculty

Faculty	Professor	Associate Professor	Senior Lecturer	Lecturer	Associate Lecturer	Total
Business	19	24	44	49	16	**152**
Design, Architecture & Building	7	6	28	38	2	**81**
Education	3	9	19	14	0	**45**
Engineering	9	9	35	14	0	**67**
Humanities & Social Sciences	7	8	19	18	0	**52**
Information Technology	9	9	19	16	4	**57**
Law	10	6	22	24	2	**64**
Nursing, Midwifery & Health	17	2	15	17	0	**51**
Science	22	20	40	28	3	**113**
Institute for International Studies	3	1	8	6	7	**25**
Total	**106**	**94**	**249**	**224**	**34**	**707**
% UTS	**15.0%**	**13.3%**	**35.2%**	**31.7%**	**4.8%**	**100%**
% Const courses in Australia	**9.1%**	**13.4%**	**31.4%**	**43.5%**	**2.5%**	**100%**

Source: www.uts.edu.au

The bottom two rows of Table 2 show the percentage of academics in the various designations. Comparing the construction courses in Australia to UTS and depicted in Graph 2, the construction discipline has less 'professors' on average and a higher concentration of 'lecturers'.

Graph 2
Comparing the 'average" construction course to UTS



As noted a second questionnaire (see Appendix) was sent to 45 Australian construction academics to gather data on personal experience. This resulted in a 60 percent response and the results of the 27 respondents (23 males and 4 females) are shown in Tables 3, 4, 5 and 6.

To avoid any identification of the respondents, Table 3 shows the numbers and averages under the age groupings. The highest number of academics in construction is in the 'over 55 years' group[1] followed by the '50-55 years' group. In other words, more than 55% of the academics in the discipline are over 50 years of age. Not surprising, the two youngest groups had the least industry experience, but other than the 50-55years group, the number of doctoral holders is high, particularly in the younger ages with one in three up to 44 years and two in three from 45-50 years.

The DEST points averaged 1.61 per annum for the discipline with the young academics (2.17 and 2.67) outperforming the older groups. One disappointing aspect of the survey was that two academics did not even know what DEST points meant.

Table 3

Age profile:	No.	%	Industry (Yrs)	Doctorate %	DEST Points p.a.
Under 35 years	0	0			
35 to 39 years	3	11.1%	5.33	33.3%	2.17
40 to 44 years	3	11.1%	10.67	33.3%	2.67
45 to 50 years	6	22.2%	17.00	66.7%	1.89
50 to 55 years	7	25.9%	12.17	14.3%	1.07
Over 55 years	8	29.6%	16.25	50.0%	1.28
DEST points (average 3 years)					**1.61**

Table 4 has been derived to contrast the differences between the 'new' academics, that is the more recently appointed academics to those with longer standing. Accordingly, the table shows the questionnaire's results for beginning at tertiary level in the 'pre 1990', '1990-1999' and 'post 2000' periods.

Table 4

	No.	Doctorates (%)	Industry (yrs)	DEST (Av.)
Pre 1990	9	55.6%	10.78	1.42
1990-1999	14	35.7%	15.9	1.66
Post 2000	4	25.0%	8.5	1.88

The results in Table 4 reinforce the comment in the introduction, that tertiary institutions are favouring researchers more than practitioners in their appointments. Whilst only 25% of the post 2000 appointments hold a doctorate, this will increase within the year, as two of these academics are well advanced in their doctorates and would thus push the result to 75%. In addition, the other academic has a "research masters" degree. Put simply, the post 2000 appointments were academics that are researchers as indeed their average DEST output far outweighs the other two categories. However, this post 2000 group also had the least average industry experience.

Out of interest, Table 5 compares the two major strands of the background (construction and quantity surveying) of the academics. As observed, the academics with a quantity surveying background have a higher average DEST outcome and less on average industry years experience than their construction counterparts.

[1] As an aside, this has short-term implications, as many of those in this age bracket would be expected to retire in the near future.

Table 5
Construction vs Quantity Surveying

	No.	DEST Ave. p.a.	PhDs	Industry Yrs
Construction	13	1.49	30.8%	14.54
Const & QS	3	2.00	33.3%	11.67
Q S	6	2.38	33.3%	12.00

Note: 3 academics responded with a background in both Construction and QS.

Finally, Table 6 summarises the details under the academic grade. The discipline has a 40.7% of its academics holding a doctorate, which is relatively high when compared to the property discipline, which had 35% in a similar study in the property discipline (Small and Karantonis, 2007). Also in good standing was that all academics in the professoriate held doctorates as compared to 50% of the professors and 20% of the associate professors in the property discipline. Whilst there were a relatively small number of females in the construction discipline, 50% of the females held doctorates compared to 36% of all male academics in the discipline.

Table 6
Summary of construction academics in Australia

Current Grade	Internal or Move promotion	Years in present grade	Years in tertiary education	Highest Tertiary qualification	Gender	Years in industry	Experience C=construction; Q=quantity surveyor; E=engineer; A=Architecture; O=other
Prof	Both	2	18	PhD	M	**10**	C
Prof	na	13	30	PhD	M	**15**	Q
2	**I=1,M=1**		**Av =24**		**F=0%**	**Av=12.5**	**C=50%;Q=50%**
Ass Pro	I	7	17	PhD	M	**30**	A
Ass Pro	Both	3	15	PhD	M	**12**	C,Q,E
2	**I=2,M=1**		**Av=16**		**F=0%**	**Av=21**	**C=16.7%,Q=16.7%**
Snr Lect	I	13	13	Master [c]	M	17	Q
Snr Lect	na	7		Master [R]	M	8	C
Snr Lect	I	10	18	PhD	M	17	O
Snr Lect	I	9	21	Master [c]	M	10	C,E
Snr Lect	I	5	12	Bachelor	M	25	C
Snr Lect	I	7	15	Master [R]	M	7	Q,A
Snr Lect	I	3	13	PhD	M	28	C
Snr Lect	na	4	20	PhD	F	9	O
Snr Lect	na	7	14	Master [R]	F	16	C
Snr Lect	I	12	19	PhD	M	18	C,E
Snr Lect	I	10	17	Bachelor	M	0	
Snr Lect	I	10	20	PhD	M	18	Q
Snr Lect	Both	5	22	PhD	M	6	C
Snr Lect	I	13	29	Master [R]	M	7	Q
Snr Lect	na	6	9	P Grad Dipl	M	18	C,Q
15	**I=11,M=1**		**Av=17.3**		**F=13.3%**	**Av=13.3**	**C43.3%,Q=26.7%**

Lecturer	na	21	21	Master [c]	M	**6**	C,E
Lecturer	na	6	6	Master [R]	M	**18**	C
Lecturer	na	6	6	PhD	F	**1**	E
Lecturer	I	15	16	Master [R]	M	**14**	C,O
Lecturer	I	3	6	Master [R]	M	**5**	C,Q
Lecturer	I	2	5	Master [c]	M	**10**	C
Lecturer	I	7	15	Master [R]	M	**8**	Q
7	**I=4**		**Av=10.7**		**F=14.3%**	**Av=8.9**	**C=50%,Q=21.4%**
Ass Lect	na	10	**10**	Bachelor	F	**20**	C,A
1					**F=100%**	**Av=20**	

An interesting observation was that contrary to popular perception amongst academics, that one must change institutions to get promoted, only three had to move tertiary institutions and in all cases, those academics had also had an internal promotion. Another interesting result contrary to perception was that only 15% said that if they had their career over again they would not choose to be academics. On the positive side, 63% would definitely choose academia again, whilst 11% would be fractional and the other 11% were not sure.

'Flexibility' and 'teaching' were equally the most positive motivating factors for choosing to be an academic, followed by 'independence' and research'. On the other hand, the only negative answer made by several respondents was the increase in administration. So overall, one could say that the current construction academics are getting 'job satisfaction'.

Conclusion

The results of the questionnaire in this paper have highlighted some significant results. The results have confirmed some perceptions among academics, whilst at the same time rejected other perceptions.

The results confirmed that research is becoming the main priority over industry experience in appointing new academics in the construction discipline. Indeed as evident in the paper, the post 2000 appointees have all shown research qualities by having either having or nearly completed a doctorate and having a higher average DEST points per annum than the more established academics.

A negative aspect of the results is that considering the construction discipline has been at the university level for over three decades, there is still a bias towards lower level academic grades. However, the results also showed that academics do not have to change institutions to get promoted and overall, construction academics are satisfied in their job.

Finally, from the survey it was revealed that nearly 30 percent of the construction academics are over 55 years of age. This implies that there could be a large number of experienced construction lecturers leaving the discipline over the coming years who would then more than likely be replaced by more research oriented academics.

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